

REMARKS

Status of the Claims

Claims 1-5 and 7-17 are pending, with claims 1, 9, and 13 being independent. Claims 18-28 have been cancelled without prejudice to or disclaimer of the subject matter contained therein. Without conceding the propriety of the rejections, claims 1, 9, and 13 have been amended to even more clearly recite and distinctly claim the invention. Support for the amendments may be found in the original claims as well as throughout the specification. Therefore, no new matter has been added.

Initially, Applicants would like to thank the Examiner for discussing the application and the cited art during the interview on June 3, 2004. As discussed during the interview, Applicants respectfully request the Examiner to reconsider and withdraw the outstanding rejections in view of the following remarks.

The Present Invention

The presently claimed invention relates to methods of inhibiting oxidation of a Fischer Tropsch product during transport and/or storage. In one aspect, the present claimed method comprises adding an effective amount of a petroleum-derived hydrocarbonaceous product to provide a blended product for transport and/or storage having a sulfur content of greater than 1 ppm and less than 100 ppm and a final peroxide number of less than 5 ppm after 7 days. In another aspect, the presently claimed invention methods of inhibiting oxidation of a Fischer Tropsch product during transport and/or storage comprises adding an effective amount of a petroleum-derived hydrocarbonaceous product, which contains sulfur, to provide a blended product for transport and/or storage having a final peroxide number of less than 5 ppm after 7 days and processing the blended product with hydrogen after the transport and/or storage period in which oxidation is to be prevented to provide a final product with a sulfur content of less than 100 ppm.

In an additional aspect, the present invention method of inhibiting oxidation of a Fischer Tropsch product during transport and/or storage comprises creating a blended hydrocarbonaceous product for transport and/or storage by mixing (i) a Fischer Tropsch product,

(ii) an effective amount of sulfur-containing petroleum-derived hydrocarbonaceous product, and
(iii) an effective amount of an antioxidant selected from the group consisting of phenolic compounds, diphenylamine compounds, and combinations thereof. The blended product has a final peroxide number of less than 5 ppm after 7 days and the effective amount of antioxidant in (i) and (ii) is less than the amount that would be required in (i) alone. As the specification teaches, these conventional antioxidants are expensive and the presently claimed methods of inhibiting oxidation during transport and/or storage require reduced amounts of these expensive antioxidants.

Claim Rejections Under 35 U.S.C. § 103

Claims 1-5 and 7-28 are rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,663,767 (“Berlowitz”) alone, or in view of EPA 427,456 (“Hanlon”). As discussed during the interview, Applicants respectfully disagree with the rejection; therefore, this rejection is respectfully traversed.

Berlowitz discloses a diesel fuel blend comprising a Fischer-Tropsch derived hydrocarbon distillate having a T95 of at least 600°F and a petroleum derived hydrocarbon distillate having a T95 no greater than 640°F, wherein the blend has a sulfur content less than 500 wppm. (claim 1). The blend demonstrates better than expected emissions when used as a diesel fuel and has a reduced sulfur content. (Column 2, Lines 16-21).

Hanlon is cited to show that phenolic antioxidants are well-known in the art of fuel and lubricant compositions.

In contrast, the present invention relates to methods of inhibiting oxidation of Fischer Tropsch products during transport and/or storage. Hydrocarbonaceous products are typically stored or transported for period of time before use. During storage and/or transport, hydrocarbonaceous products may be subject to conditions that promote oxidation. Oxidation during transport and storage and prior to use may cause many problems with ultimate use of the product. In particular, Fischer Tropsch products tend to oxidize relatively rapidly when exposed to air. (Page 7, Paragraph 0029). The presently claimed invention relates to methods of inhibiting oxidation of these Fischer Tropsch products during shipment and storage.

The blended products of the present invention are tested for stability according to standard procedures for measuring the buildup of peroxides according to ASTM D3703-99. ASTM D3703-99 covers the determination of peroxide content of aviation-turbine fuels. The formation of peroxides indicates the onset of oxidation and provides a measure of oxidative stability. (Page 11, Paragraph 0043).

In certain embodiments of the presently claimed methods, after the transport and/or storage period in which oxidation is to be prevented and before the Fischer-Tropsch products are to be sold/used, it may be desirable to remove or at least reduce the impurities, aromatics, and heteroatoms (such as sulfur, nitrogen, metals). The impurities aromatics, and heteroatoms content may be reduced by a number of processes. These processes may include hydrotreating, hydrocracking, hydroisomerization, extraction, adsorption, and the like. (Page 15, Paragraph 0059). Therefore, the methods of the present invention may also comprise the step of processing the blended final product with hydrogen to remove at least a portion of any impurities, aromatics, and heteroatoms (such as sulfur, nitrogen, metals) originating from the petroleum derived product.

As discussed during the interview, Berlowitz relates to a diesel fuel product in which the heavy portion of the petroleum derived hydrocarbon distillate has been replaced with a heavy Fischer-Tropsch derived hydrocarbon distillate. The diesel fuel product of Berlowitz has a lowered sulfur content and reduced emissions due to this replacement of the heavy portion of the petroleum derived distillate with the Fischer-Tropsch derived distillate. Also as discussed during the interview, as Berlowitz relates to a diesel fuel product, Berlowitz does not disclose or suggest methods of inhibiting oxidation of Fischer Tropsch products during shipment and/or storage. Furthermore, Berlowitz does not address any instability of Fischer Tropsch products during shipment and storage, at least in part, due to the formation of peroxides.

Accordingly, it is respectfully submitted that Berlowitz does not disclose or suggest the presently claimed methods of inhibiting oxidation of Fischer Tropsch products during transport and/or storage.

Hanlon is cited merely to show that phenolic antioxidants are well-known in the art of fuel and lubricant compositions. Accordingly, it is respectfully submitted that even if there were some suggestion or motivation to combine Berlowitz and Hanlon and a reasonable expectation of

success, Berlowitz and Hanlon, even when combined, do not teach or suggest the presently claimed methods of inhibiting oxidation of Fischer Tropsch products during transport and/or storage. Therefore, withdrawal of the obviousness rejections is respectfully requested.

Conclusion

Without conceding the propriety of the rejections, the claims have been amended, as provided above, to even more clearly recite and distinctly claim Applicants' invention and to pursue an early allowance. For the reasons noted above, the art of record does not disclose or suggest the inventive concept of the present invention as defined by the claims.

Again, Applicants would like to thank the Examiner for the favorable consideration extended during the interview. In view of the discussion at the interview and the foregoing remarks, reconsideration of the claims and allowance of the subject application is earnestly solicited. The Examiner is invited to contact the undersigned at the below-listed telephone number, if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted,
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